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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/590,962	08/29/2006	Frank Arndt	4001-1227	5638

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EXAMINER	
ROSENAU, DEREK JOHN	
ART UNIT	**PAPER NUMBER**
2837	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/590,962	ARNDT ET AL.	
	Examiner	Art Unit	
	Derek J. Rosenau	2837	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *18 May 2009*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1 and 3-10* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1 and 3-10* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. In view of the Appeal Brief filed on 18 May 2009, PROSECUTION IS HEREBY REOPENED. New grounds of rejection are set forth below.

To avoid abandonment of the application, appellant must exercise one of the following two options:

(1) file a reply under 37 CFR 1.111 (if this Office action is non-final) or a reply under 37 CFR 1.113 (if this Office action is final); or,

(2) initiate a new appeal by filing a notice of appeal under 37 CFR 41.31 followed by an appeal brief under 37 CFR 41.37. The previously paid notice of appeal fee and appeal brief fee can be applied to the new appeal. If, however, the appeal fees set forth in 37 CFR 41.20 have been increased since they were previously paid, then appellant must pay the difference between the increased fees and the amount previously paid.

A Supervisory Patent Examiner (SPE) has approved of reopening prosecution by signing below:

/Walter Benson/
Supervisory Patent Examiner, Art Unit 2837.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1, 3, 5, 6, and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pelrine et al. (US 2002/0122561) in view of Nilsson (US 4539575).

4. With respect to claim 1, Pelrine et al. discloses a cladding (Fig 6) comprising: an elastic boundary layer (item 72) which forms the surface of the cladding (Fig 6), and a polymer actuator (Abstract and paragraph 17) in the form of a membrane actuator which forms the cladding for the deformation of the boundary layer (Fig 6).

Pelrine et al. does not disclose expressly that the cladding bears on a substrate by means of a bearing area which matches the surface area of the cladding in terms of magnitude, with only subregions of the bearing area being fixed to the substrate.

Nilsson teaches a piezoelectrically driven cladding (item 13 and 14) wherein the cladding bear on a substrate (item 10) by means of a bearing area which matches the surface area of the cladding in terms of magnitude, with only subregions of the bearing area being fixed to the substrate (Fig 1).

At the time of invention, it would have been obvious to a person of ordinary skill in the art to combine the equal-bearing-area configuration of Nilsson with the electroactively driven cladding of Pelrine et al. for the benefit of preventing undesired deformations in the cladding due to expansion and contraction of the cladding materials.

5. With respect to claim 3, the combination of Pelrine et al. and Nilsson discloses the cladding as claimed in claim 1. Both Pelrine et al. and Nilsson disclose that the cladding is fixed to the substrate at regular intervals in a punctiform manner (Fig 6 of Pelrine et al. / Fig 3 of Nilsson).

6. With respect to claim 5, the combination of Pelrine et al. and Nilsson discloses the cladding as claimed in claim 1. Pelrine et al. discloses that said cladding is composed of individual lamellae which are each fixed to the substrate by means of one end, with the lamellae each being polymer actuators in the form of bending actuators (Fig 6).

7. With respect to claim 6, Pelrine et al. discloses a cladding (Fig 6) comprising: an elastic boundary layer (item 72) which forms the surface of the cladding (Fig 6), and a polymer actuator (Abstract and paragraph 17) in the form of a membrane actuator which forms the cladding for the deformation of the boundary layer (Fig 6), and having at least one electrode layer (Abstract) for the polymer actuator, which electrode layer extends only over a subregion of the polymer actuator (as the individual elements are driven individually, the electrodes that drive the elements must be separate from each other; therefore, the electrode layer would extend over only a subregion of the polymer actuator.)

Pelrine et al. does not disclose expressly that the cladding bears on a substrate by means of a bearing area which matches the surface area of the cladding in terms of magnitude, with the cladding being firmly connected to the substrate by means of the entire bearing area.

Nilsson teaches a piezoelectrically driven cladding (item 13 and 14) wherein the cladding bear on a substrate (item 10) by means of a bearing area which matches the surface area of the cladding in terms of magnitude, with the cladding being firmly connected to the substrate by means of the entire bearing area (Fig 1).

At the time of invention, it would have been obvious to a person of ordinary skill in the art to combine the equal-bearing-area configuration of Nilsson with the electroactively driven cladding of Pelrine et al. for the benefit of preventing undesired deformations in the cladding due to expansion and contraction of the cladding materials.

8. With respect to claim 9, the combination of Pelrine et al. and Nilsson discloses the cladding as claimed in claim 1. Pelrine et al. discloses that the boundary layer is in the form of an auxiliary layer on the polymer actuator (electrode layer on surface of electroactive polymer layers).

9. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Pelrine et al. in view of Nilsson and Maushard et al. (US 6803700).

10. With respect to claim 4, the combination of Pelrine et al. and Nilsson discloses the cladding as claimed in claim 1.

Neither Pelrine et al. nor Nilsson discloses that the cladding is provided with through-holes.

Maushard et al. teaches a piezoelectric actuated cladding, in which the cladding (item 10) is provided with a through-hole (item 36).

At the time of invention, it would have been obvious to a person of ordinary skill in the art to combine the through-hole of Maushard et al. with the cladding of Pelrine et al. as modified by Nilsson for the benefit of reducing the resistance to bending of the cladding (column 3, lines 36-38).

11. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Pelrine et al. in view of Nilsson and Kihara et al. (US 2002/0043901).

12. With respect to claim 7, the combination of Pelrine et al. and Nilsson discloses the cladding as claimed in claim 6.

Neither Pelrine et al. nor Nilsson discloses expressly that the electrode layer forms the webs of a honeycomb-like structure on the polymer layer.

Kihara et al. teaches a piezoelectric device in which the electrode is in the form of the webs of a honey-comb-like structure (Fig 8D).

At the time of invention, it would have been obvious to a person of ordinary skill in the art to combine the honeycomb-like electrode of Kihara et al. with the cladding of Pelrine et al. as modified by Nilsson for the benefit of allowing for easy fabrication (Paragraph 85 of Kihara et al.).

13. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Pelrine et al. in view of Nilsson and Dydyk (US 5596239).

14. With respect to claim 8, the combination of Pelrine et al. and Nilsson discloses the cladding as claimed in claim 6.

Neither Pelrine et al. nor Nilsson discloses expressly that the substrate forms an electrode for a polymer layer of the polymer actuator.

Dydyk teaches a piezoelectric actuator in which the substrate (Fig 3, item 159) forms an electrode for the piezoelectric layer (item 150) of the piezoelectric actuator (Fig 3).

At the time of invention, it would have been obvious to a person of ordinary skill in the art to combine the electrode arrangement of Dydyk with the cladding of Pelrine et

al. as modified by Nilsson for the benefit of permitting a wider range of electrode materials to be used as the electrode (column 5, lines 19-24).

15. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Pelrine et al. in view of Nilsson, Kihara et al., and Dydyk.

16. With respect to claim 10, the combination of Pelrine et al., Nilsson, Kihara et al., and Dydyk discloses the cladding as claimed in claim 7.

None of Pelrine et al., Nilsson, or Kihara et al. discloses expressly that the substrate forms an electrode for a polymer layer of the polymer actuator.

Dydyk teaches a piezoelectric actuator in which the substrate (Fig 3, item 159) forms an electrode for the piezoelectric layer (item 150) of the piezoelectric actuator (Fig 3).

At the time of invention, it would have been obvious to a person of ordinary skill in the art to combine the electrode arrangement of Dydyk with the cladding of Pelrine et al. as modified by Nilsson and Kihara et al. for the benefit of permitting a wider range of electrode materials to be used as the electrode (column 5, lines 19-24).

Response to Arguments

17. Applicant's arguments with respect to claims 1 and 3-10 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Derek J. Rosenau whose telephone number is (571) 272-8932. The examiner can normally be reached on Monday thru Thursday 7:00-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Walter Benson can be reached on (571) 272-2227. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Derek J Rosenau/
Examiner, Art Unit 2837
/Walter Benson/
Supervisory Patent Examiner, Art Unit 2837